Òun, ohun, ohùn: an experimental study of /h/ in Yoruba

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ABSTRACT

This article reports the results of an experimental study of the realisation of /h/ in Yoruba. The aim was to determine whether the 1974 orthography convention requiring that ***òun*** "3rd Sg" be written without "***h***" while ***ohun*** "thing" be written with the letter between the two words had any empirical basis. The results show that "***h***" is rather more frequently realised in ***òun*** than in ***ohun***. It is then argued that ***òun*** has a V-CV structure in harmony with other Yoruba pronouns, and that the dichotomy introduced in the 1974 orthography convention both lacks empirical support and breaks the pattern of Yoruba pronouns.

Keywords: Yoruba, orthography, tone, variation, pronoun, West Benue-Congo

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INTRODUCTION

Yoruba is a cross-border West Benue-Congo language having the largest concentration of its speakers in South-western Nigeria. Other countries where it is spoken include the Republic of Benin, Togo, Sierra Leone, Cuba, and Brazil (Oyetade, 2011). The standard form of Yoruba (SY) has 18 consonant, seven oral vowel and five nasal vowel phonemes (Akinlabi 2004). These phonemes and their corresponding orthographical symbols are presented in Table (1). In addition to the sounds, Yoruba has three tones, high (′), mid (usually left unmarked) and low (`), while its syllable structure includes the simple CV, V, and the syllabic nasal N.

Consonants								
/b/ <b>	/t/ <t>	/d/ <d>	/k/ <k>	/g/ <g>	/k͡p/ <p>	/g͡b/ <gb>	/dʒ/ <j>	/m/ <m>
/n/ <n>	/f/ <f>	/s/ <s>	/ʃ/ <ṣ>	/l/ <l>	/ɹ/ <r>	/j/ <y>	/w/ <w>	/h/ <h>
Oral vowels								
/i/ <i>	/e/ <e>	/ɛ/ <ẹ>	/a/ <a>	/ɔ/ <ọ>	/o/ <o>	/u/ <u>		
Nasal vowels								
/ĩ/ <in>	/ɛ̃/ <ẹn>	/ã/ <an>	/ɔ̃/ <ọn>	/ũ/ <un>				

Table 1: Yoruba phoneme-grapheme correspondence

The evolution of Yoruba orthography started in the nineteenth century with the first writing undertaken by Christian missionaries between 1830 and 1875 (Ajiboye 2012/2013). Some of the other subsequent attempts made were dated 1965, 1969, and finally 1974. It is the 1974 writing convention that has persisted in spite of its many deficiencies (Fagborun 1989; Ajiboye 2012/2013).

Rule (4) in the 1974 Yoruba Orthographic Recommendations states that the third person singular pronoun be written as ***òun***, which creates a structural distinction between it and ***ohun*** 'thing.' This has generated a degree of scholarly attention. For instance, Arohunmolase (1987) notes that the committee had done exactly what was right, while Fagborun (1989:76) points out that, in spite of the distinction, the third person singular pronoun ***òun*** is still confused with ***ohun*** 'thing' which ought not to be so. Also Olumuyiwa (2013: 44) canvasses for the continued use of the convention, claiming that future corrections would not amend the divergences.

A number of scholars believe that the Yoruba writing system can still be improved upon. One of the scholars in this category is Ajiboye. Ajiboye (2012/2013) presents a critical review of the convention, with well-thought-out suggestions for improvement. As regards the writing of the third person singular pronoun, Ajiboye (2012/2013:38) suggests that it should be written as ***òhun*** to harmonise its syllable structure with the prevailing V-CV of the other pronouns in Yoruba. To him, it can then be assumed that the consonant /h/ is silent; but he quickly suggests that the word needs to be investigated phonetically before such a step could be taken. Ajiboye also suggests an investigation of whether the consonant /h/ is actually pronounced in ***ohun*** 'thing'. This is the task taken up in this research. Thus, the sole objective is to investigate whether the two words are pronounced alike (both without /h/ or both with it) or differently in line with the existing orthographic dichotomy. This single objective is approached from four intertwined perspectives, namely: (1) Can it be acoustically shown that ***ohun*** has /h/ while ***òun*** does not? (2) Do both words have /h/? (3) Do both words lack /h/? (4) Is there evidence that the

features of /h/ present in other Yoruba words in which it occurs are present in these two words or in either of them?

Works exist on the acoustic characteristics of fricatives and especially glottal fricatives. With specific reference to English /h/, Fry (1979:122) notes that because its fricative noise is generated in the larynx, it comes across more like a whispered vowel having 'marked formant bars which correspond very closely in frequency with the formants of the following vowels' in addition to the noise. An inference from Fry (1979) is that it is possible to see the beginning and end points of /h/ when it is in intervocalic position. Roach (2009: 42) corroborates Fry's report that in English, /h/ always shares the features of the vowels following it as a result of co-articulation. Roach notes further that between voiced sounds, English /h/ is also produced with weak voicing.

Laufer (1991) presents reports of /h/ in Hebrew, Arabic and Finnish. Specifically, Laufer (1991:92) observes that in Hebrew and Arabic, the phoneme /h/ has three allophones, namely [h], [ɦ] and 'zero'. By zero, I deduce that Laufer implies that the sound might not be realised in some instances. Regarding the narrowing of the glottis during the production of /h/, Laufer shows that Finnish, Hebrew and Arabic all behave alike. Laufer also reports that at the beginning of an utterance, it is possible to see the articulatory movements culminating in the production of /h/, which means the initial position is a reliable environment for determining the exact nature of the sound.

Ertan (2013) reports that Turkish /h/ mostly exhibits characteristics similar to those of adjacent vowels, except when it is followed by /u/ where it lacks energy concentration in 72% of the data.

Regarding the acoustic features of /h/ in Yoruba, I am not aware of any particular work. Consequently, this study begins by identifying its features in word-initial position after which the identified features will serve as bases of achieving the primary objective of the research

METHODOLOGY

THE SPEAKERS

The participants of this research included 15 competent Yoruba speakers, 9 male and 6 female, who were required to undertake a reading exercise[1]. Of the 15 participants, two studied Yoruba at the University level and were Yoruba-medium broadcasters at the time of recording, two had doctoral degrees in Yoruba and were teaching Yoruba at higher institutions of learning within South-western Nigeria, and two were Yoruba teachers in Colleges of Education in South-western Nigeria. Another eight were graduate students in Yoruba, six of whom were teaching Yoruba in secondary schools in South-western Nigeria at the time of recording, and one was a year-three undergraduate of Yoruba. Yoruba teachers, Yoruba students, and Yoruba-medium broadcasters were deliberately selected for this research because Standard Yoruba is generally believed to be the variety used in Education, the mass media and other formal settings. This means the level of education and specific factored into the selection of participants were necessary if adequate data on Standard Yoruba were to be sourced. All the respondents were born and raised in Yorubaland and spoke what is considered Standard Yoruba (SY). None of them had any history of speech disorders at the time of recording.

[1] Although all the participants speak English as second language, their competence in English was not taken into consideration since Yoruba was their L1.

DATA

The data for this study contained 21 utterances distributed as follows: 5 containing ***òun*** '3rd Sg', 5 containing ***ohun*** 'thing', and 5 containing both ***òun*** and ***ohun***. Another 6 sentences containing ***ohùn*** 'voice' were recorded (See appendix 1). ***Ohùn*** 'voice'**,** which is the only other Yoruba word with similar segmental materials and structure, was added to gain further insight to a possible pattern of /h/-realisation in the context in focus. Tone was not considered in designing the paradigm because there are no other words of the same segmental materials that could yield the other possible tonal concatenations in the language. The utterances were structured such that each of the words in focus occurred both sentence-initially and medially. This was done especially to ensure that differences in sub-glottal pressure across different sentential positions would not impact on the results. Each person read each sentence five times.

In order to determine the specific acoustic characteristics of /h/ in Yoruba, 10 /h/-initial verbs were elicited separately from five speakers (See appendix 2). The initial position is the position where the sound is considered the least influenced by neighbouring sounds, thus the best for determining the nature of the sound in Yoruba (see Laufer 1991:92).

RECORDINGS

Recordings of the data were done in the soundproofed studio in the phonetic laboratory in one of the federal universities in South-western Nigeria, with four exceptions. Two of the speakers who were Yoruba broadcasters were recorded in the soundproofed studio of the radio station where they worked. For the two speakers where these recording facilities were not available, recordings were done in the quietest environment available during each recording session. Data were recorded directly onto a computer laptop, using PRAAT. During recordings, utterances were presented in random order and numbered 1-21, and each respondent read from beginning to the end, five times (it was not a case of reading each sentence five times before moving on to the next). This was done to ensure that the participants did not become conscious of which items were of specific interest in the course of the reading sessions.

DATA ANALYSIS

Each speech sound is said to have its own acoustic properties (Davenport and Hannahs 2010: 56). As such, fricatives are usually characterised with 'random noise pattern, especially in higher frequency regions, but dependent on the place of articulation' (Ladefoged and Johnson 2011: 204; see also Davenport and Hannahs 2010: 68). The resonance for /h/ is around 1000 Hertz, but generally, its energy is formant-like in patterning (Strevens 1960). Formant transition from /h/ to a following vowel can signal the presence or lack thereof of the /h/ because F2 and F3 usually reflect the points of articulation. This is because /h/ can be 'defined as the interval from the offset of the preceding vowel indicated by a substantial decrease in the waveform amplitude to a substantial increase in the wave- form amplitude corresponding to the onset of the following vowel' (Ertan 2013:99). This means that although /h/ is wedged between vowels in the words analysed in this article, its acoustic properties should still be observable.

One other property expected to indicate the presence of a voiceless fricative on the spectrogram, a break in fundamental frequency (F0), was not considered because [h] is not like

the other voiceless fricatives in the sense of air passing through a narrow opening within the oral cavity (Ladefoged 2001:57). Rather the place of articulation of [h] doubles as the source of fundamental frequency, hence it has more prominent resonances which may make it come out as possessing F0. Data analysis thus involved studying the spectrograms of the recorded utterances one after the other to verify the presence or absence of the expected properties of /h/ in each token. Analyses were done manually and results were tabulated with a 'p' or 'n' sign indicating 'positive' or 'negative' against each token to show the presence or absence of /h/. The acoustic features were validated auditorily because usually a sound that can be seen acoustically aught also to be noticed perceptually; besides, it is the perception that the native speakers relate to. For the sake of analysis as well as ease of referencing, the utterances were organised into ***òun***, ***ohun,*** and ***ohùn*** sentences respectively. Averages were then calculated according to these groupings.

RESULTS

THE ACOUSTIC CHARACTERISTICS OF /h/ IN MONOSYLLABIC CV VERBS

For all the speakers whose utterances were examined for the acoustic characteristics of /h/ in mono-syllabic CV verbs, the /h/ generally exhibits a significantly fainter version of the formant configuration of following vowels. This is especially true of F2 and above. The onset of F1 tends to consistently correspond to the general onset of the vowel, leaving out the /h/ without F1 in most instances. Amplitude is another indication of the difference between /h/ and the following vowel for all the speakers examined; the amplitude of /h/ is very minimal compared to the prominent amplitude of following vowels.

Another significant feature of /h/ in the initial position is the nature of the intensity curve which only begins to rise toward the offset of the /h/ and then registers its presence throughout the vowel. Figure (1a) below shows these identified features of /h/ before /o/ <**ó>, /ɔ́/ <ọ́>, /e/ <e>, /ɛ/ <ẹ>, /ú/ <ú/,** and /**á/ <á>**. Note that Figures are calibrated vertically such that the topmost section contains the wave forms (where the amplitudes indicate the positions of vowels as against the /h/ with no visible amplitude); beneath it is the spectrum (where the yellow line stands for intensity, the blue horizontal bars represent F0 and the red lines are tracings of frequencies – F1 lowest, F2 above it, F3 further up etc.); and the text grid containing the annotation of the utterances is at the bottom.

In Figure (1a) below, the six dark bars arranged horizontally at the top correspond to the six vowels annotated at the bottom. In-between, we see the yellow line (intensity) absent above each <h>, but rising only at the onset of each vowel and falling at its offset. Also, the blue line (F0/pitch) is seen above each vowel, but not above the <h> preceding the vowel in each word. Finally, it is also observable that whereas the formants (spectrum) of the vowels are well-formed dark and clear (periodic), that of the <h> in each word is not well-formed (aperiodic) and usually begins higher up the spectrum. Also notice that, in consonance with Ertan (2013), the /h/ lacks energy concentration when followed by /u/. The same pattern is present in Figures (1b) and (2a-c). Thus, the /h/ in Yoruba has clear and definable acoustic identity.

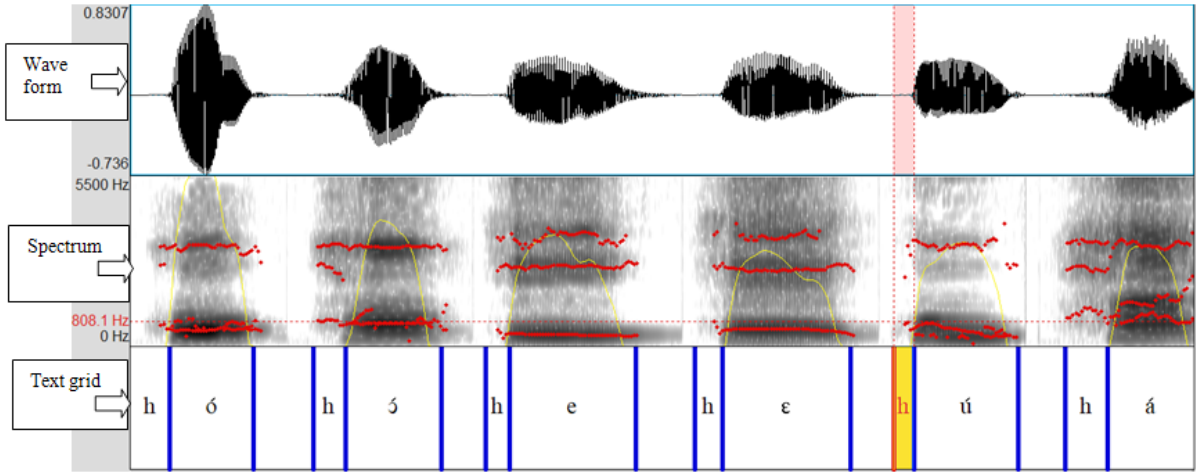

Fig. 1a: acoustic features of/h/ before /o/ <ó>, /ɔ́/ <ọ́>, /e/ <e>, /ɛ/ <ẹ>, /ú/ <ú>, and /á/ <á>

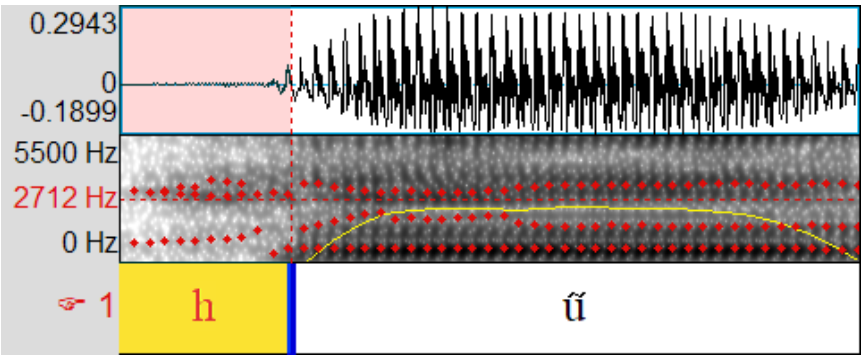

Fig. 1b: acoustic features of /h/ before /ũ/ <un>

/h/ IN ÒUN, OHUN, OHÙN

It should first be noted that the acoustic characteristics of /h/ in the initial position of monosyllabic CV verbs identified above correspond to the features reported in the literature reviewed in the introduction; the features are therefore regarded as sufficient bases for the analyses of the three words in focus, namely ***òun***, ***ohun***, ***ohùn***. In the analysis, a vowel immediately preceding /h/ in each case is regarded as V1 and the one immediately following, V2. Hence, between V1 and V2 of a word to be regarded as containing /h/, we expect a dip in amplitude, a dip in intensity, as well as fainter formants with F1 possibly absent. In addition, it is expected that where the V1 (/o/) and V2 (/ũ/) are produced without an intervening /h/, the F1 and F2 will begin closer together and then go farther apart as the production enters V2 in line with the basic formant characteristics of the two vowels; whereas the presence of /h/ between the two sounds will interrupt this transition. The general implication of this is that the location of /h/ can be identified in the selected utterances. An instance of the dip in intensity and amplitude is shown in the speech of one of the participants in Fig 2 below. Notice that, in spite of the intervocalic position of the /h/, the dip in intensity and amplitude still complements the formant characteristics clearly.

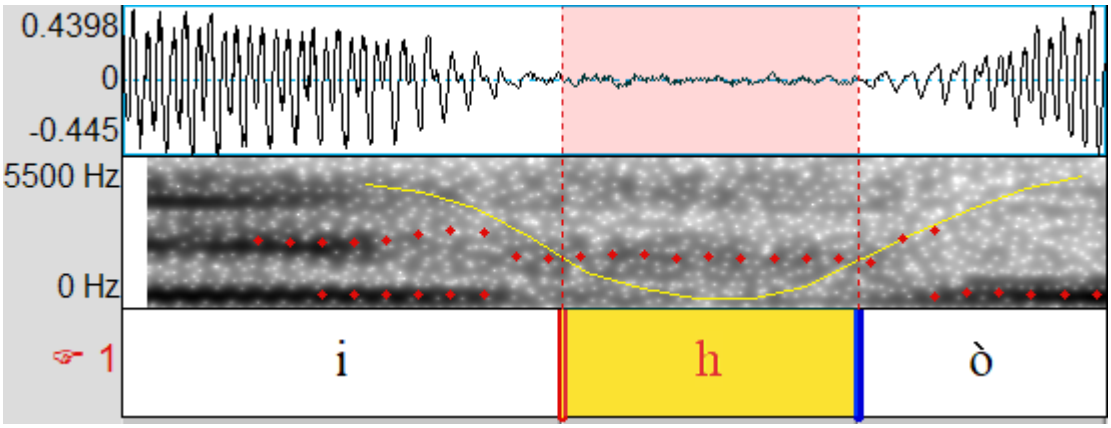

Fig 2a: **ihò** 'pit' showing a dip in intensity and amplitude between V1 and V2

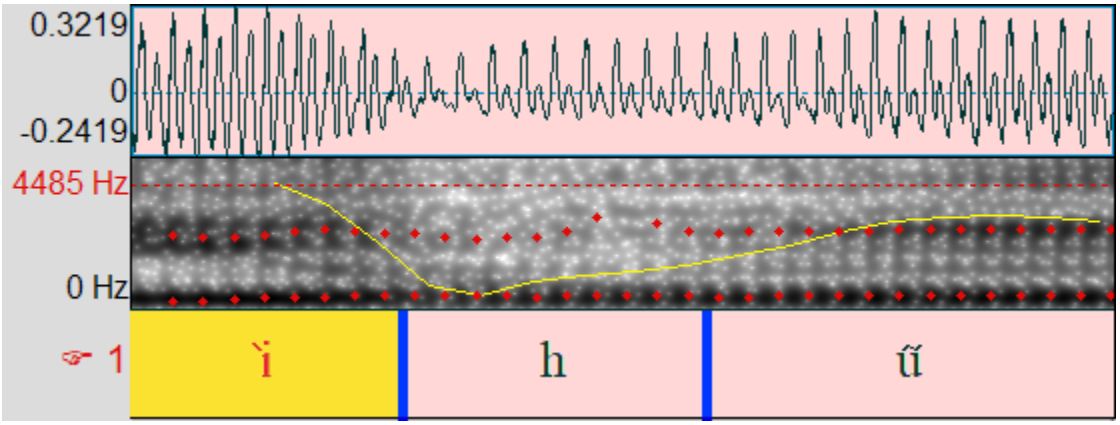

Fig 2b: **ìhun** 'pattern' showing dip in intensity and amplitude between V1 and V2 and faint formant

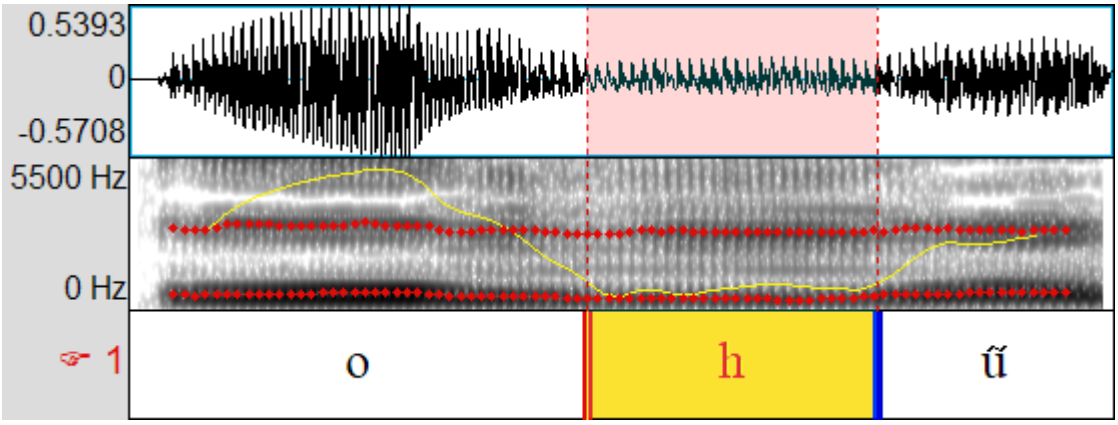

Fig 2c: **ohùn** 'voice' showing dip in intensity and amplitude between V1 and V2 and faint formant

STATISTICAL ANALYSES

As noted earlier, 15 competent Yoruba speakers participated in the experiments, with 21 utterances which each of them read five times. This generated 1,575 tokens, but with 6 of the utterances containing a combination of two of the words, a total of 2,025 items were expected from the tokens. However, 7 items were not usable because of noise interruption, leaving us with 2018 items analysed. The distribution of the tokens is spelt out in Table 2 below, while the number of occurrences of /h/ for each of ***òun, ohun*** and ***ohùn*** is outlined in Table 3.

Summary			
	Male	**Female**	**Overall**
òun	448	300	748
ohun	494	328	822
ohùn	268	180	448

Table 2: Tokens analysed

Summary			
	Male	**Female**	**Overall**
òun	200	135	335
ohun	199	92	291
ohùn	207	125	332

Table 3: /h/ occurrences

These results (Fig. 3; appendix 3) show that ***òun*** recorded 44.6 and 45 per cents for male and female speakers respectively, while its overall occurrence was 44.8%. ***Ohun*** recorded 40.3 and 28.1 per cents for male and female speakers respectively, while its overall occurrence was just 35.4%. ***Ohùn*** recorded a much higher proportion of occurrence at 77.2 and 69.4 percents for male and female speakers respectively, while its overall occurrence was 74.1%.

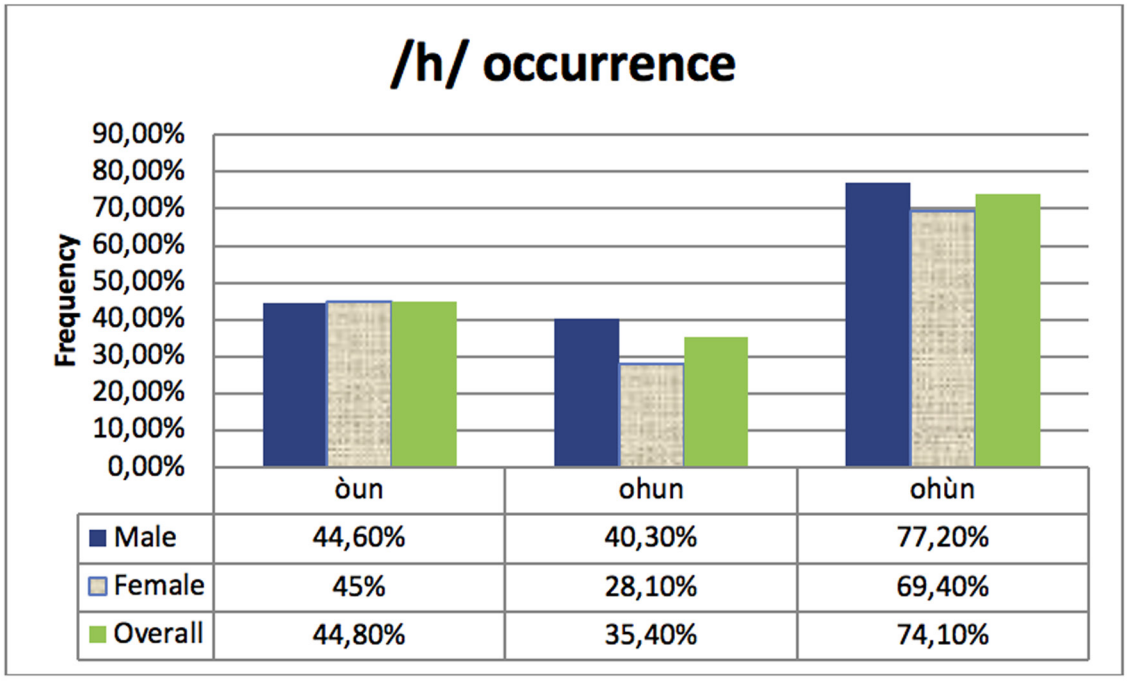

Figure 3: Comparative chart of /h/ occurrence in Yoruba

DISCUSSION

The results of the experiment on the occurrence of /h/ in ***òun, ohun*** and ***ohùn*** suggest that the orthographical distinction between the writing of ***òun*** and ***ohun*** by using <h> in the latter, but not in the former, lacks empirical support. Notice that, for ***òun*** /h/ was more frequently realised than for ***ohun*** in all the variables analysed (Table 4). This is in spite of the fact that the experiment required reading and participants would naturally be tempted to read ***ohun*** with the <h> because they could see it in what they were to read. That the speakers rather produced /h/ more for ***òun,*** which lacks it in writing, is therefore instructive. This has far-reaching implications for the conceptualisation of the structure of Yoruba personal pronouns as well as the orthography of the language.

Summary			
	Male	**Female**	**Overall**
òun	44.60%	45%	44.80%
ohun	40.30%	28.10%	35.40%
ohùn	77.20%	69.40%	74.10%

Table 4: Simple percentage results of /h/ occurrence

First, our findings confirm Ajiboye's (2012/2013) suspicion that ***òun*** could be of the V-CV structure in harmony with the other Yoruba pronouns. One does not expect that a sound would record a frequency of 44.8% in a position where it does not belong in the first place. This proves that ***òun*** indeed has a V-CV structure where the C is /h/. In that case, the current orthographic

writing of the word is misleading in at least two ways: it undermines the distribution of the phoneme /h/ in Yoruba, and the corollary of this is that a false variation in the structure of the personal pronouns in Yoruba has been projected and accepted by the users of the language.

Another implication of the results is that ***òun*** and ***ohun*** both have the /h/ phoneme. The question of why the sound is now a subject of wide-spread variation in both words is taken up in the next sub-section.

INTERVOCALIC /h/ DELETION

In light of the variation in /h/ realisation shown in the data, the question needs to be asked whether there is a possible pattern of intervocalic /h/-deletion in Yoruba. This implies that the pronoun ***òun*** as well as ***ohun*** have the V-CV structure but the C being /h/ is subject to optional deletion in intervocalic position in the language. One pattern that supports this possibility is the structure of the pronouns in Yoruba: all Yoruba pronouns have the V-CV syllable structure in their full form, except ***òun*** '3sg' (1).

(1) Yoruba personal pronouns

	Singular	**Plural**
1st	**èmi**	**àwa**
2nd	**ìwọ**	**ẹ̀yin**
3rd	**òun**	**àwọn**

We note that it is also only this pronoun that has an affinity with /h/, suggesting that it possibly has /h/ historically. This is the only logical way of interpreting the variation in the data, since it will be counterintuitive to claim that the pronoun has a VV structure in which the null between the two vowels can optionally be replaced by /h/. The variation attested in the realisation of /h/ in **ohun** only strengthens its presence, since it provides further evidence that /h/ is indeed there but prone to deletion in this phonetic environment. Even **ohùn** 'voice' which recorded a much higher proportion of occurrence still recorded inconsistencies that cannot be glossed over. This discovery further supports this finding that /h/ is optionally deleted in inter-vocalic position in Yoruba.

/h/ deletion, however, needs to be well situated because it tends to be limited in its spread. In three of the test utterances used for this study, the words ***ihò*** 'hole'***, ìfihàn*** 'revelation'***,*** and ***ìhun*** 'pattern' co-occur with the test words (2a-c). Again, the verbs ***hun*** 'weave' (2c) and ***há*** 'stuck' (2d) also occur in the utterances. Since these monosyllabic verbs were wedged within their respective utterances and were co-articulated with adjacent sounds, the /h/ in them can also be expected to have been prone to deletion in those environments.

(2) /h/ in other words

a) **Ohùn** ta ni mo gbọ́ nínú **ihò** yẹn? 'Whose voice did I in that hole hear?'
b) **Ìfihàn** ni **ohùn** ọmọ yií o! 'This child's voice is a revelation!'
c) Mo gbádùn **ìhun** tí ọmọ yií ń **hun ohùn** rẹ̀ yí o! 'I enjoy how this child is weaving his voice!'
d) **Ohùn** oníròhìn ti **há** o 'The newscaster's voice has trailed off'

In all of these instances, the /h/ is clearly (perceptually and acoustically) and consistently realised by all the participants. This suggests that the optional /h/ deletion in intervocalic position is limited to the position [o–ũ]; that is, preceded by /o/ and followed by /ũ/. This has further support in the earlier finding that /h/ lacks energy concentration when followed by /u/ in Yoruba (Cf. Fig. 1a and the paragraph preceding it).

It should, however, be noted that in addition to the tendency for female participants to realise the /h/ less frequently than their male counterparts, there is also a high degree of intra-gender variations among the participants (Appendix 3). Among the female participants for instance, speakers MO and TU recorded the highest frequencies for the test words, whereas AJ, AK, and AR recorded less than 50% frequencies for both **òun** and **ohun**. When we compare MO and AJ, we see MO recording 45, 38 and 26 frequencies, while AJ recorded 06, 03, and 20 for **òun, ohun** and **ohùn** respectively. Among the male participants, we see speakers IF and FO recording very low frequencies for **òun** and **ohun**, whereas the same IF had the highest frequency for **ohùn.** This, therefore, suggests that the variation in /h/-realisation occurs irrespective of gender differences in Yoruba; although it tends to be more prominent among the female speakers.

CHANGE IN PROGRESS

It was pointed out earlier that the variations in the realisations of ***òun, ohun*** and ***ohùn*** show that the three words all have the V-CV structure; but that the consonant is now being deleted with varying frequencies indicate that the realisation of the consonant /h/ is undergoing change. In this regard, these three words are at different stages of a change in progress. There are two immediate evidences in support of this change in progress: where the /h/ is present in the test words, it is usually very short with acoustic indicators not as clear-cut as those of ***ihò*** and ***ìhun***. The second evidence draws from the variation between the performance of the male and female participants. In simple percentage, the /h/ sound is less frequent in ***ohun*** and ***ohùn*** of the female participants than their male counterparts, suggesting that female speakers are possibly at a more advanced stage of the deletion than their male counterparts.

THE TONE FALLACY

Rule 4 of the 1974 Yoruba Orthographic Recommendations which states that the third person singular pronoun be written as **òun** effectively left out the phoneme /h/ which is an essential part of the word. It has subsequently been argued that this is desirable because it allows for orthographic distinction between this word and the structurally related **ohun.** It has equally been pointed out that the use of **òun** is in fact too close to **ohun** and this has lead to confusion between the two words (Fagborun 1989: 76). Writing the pronoun as **òhun** therefore may be thought to possess the potential to worsen the confusion. But this argument about confusion has ignored the place of tone in the language. With due recognition of tone, there still exists very clear distinction between **òhun** and **ohun** such that there should not be any confusion. However, with the orthographic convention affording users the liberty not to mark tone in some writings, the accuracy of orthography has been undermined. By extension, this has a strong carry-over effect on the conception of the structure of Yoruba personal pronouns.

But if tone has as much lexical effect as consonants and vowels, why should it be given

second-class status in a tone language? Yoruba is only one of the many languages whose orthographies contain flaws as a result of inadequate deployment of writing tone (See Adeniyi 2017 for examples from Ebira, Igala, and Gwari).

CONCLUSION

This article has focused on the realisation of /h/ in Yoruba. The initial aim was to experimentally test whether there is an /h/ distinction between ***òun*** and ***ohun***, but it was found that there is no such distinction. This then supports the observation that the orthographic convention of writing the third person singular pronoun as ***òun*** is suspect. Although Ajiboye's suggestion that the writing of the word be ***òhun*** to harmonise it with the other pronouns of the language in structure is based on intuition, this work has provided empirical evidence to show that the third person personal pronoun actually has a V.CV structure. The consequent implementation of this suggestion to write it as ***òhun*** would not only redress the misconception about the structure of Yoruba pronouns, it would also introduce a higher degree of linguistic accuracy into the orthography of the language.

This work also revealed additional details about the realisation of /h/ in Yoruba: it is optionally deleted between /o/ and /ũ/. It is the non-recognition of this fact that has allowed for the misconception about and misrepresentation of the third person singular pronoun in the language. This work then serves as an experimental contribution to the understanding of both the structure and orthography of Yoruba, and it is hoped that Yoruba users and teachers will incorporate this insight appropriately. It is recommended that other contentious issues in the study of Yoruba language such as High Tone Syllable and Mid Tone Syllable be studied experimentally and phonetically to guard against erroneous submissions that can have far-reaching implications on the trajectory of the language in this information age (Bamgbose 1965; Olumuyiwa 2009; Oshodi 2016). Other African languages also stand to benefit from the tangible contributions of phonetic and experimental studies of contentious issues (See Adeniyi 2017 for instances from Ebira, Gwari and Igala).

This article did not explore the possible reasons for /h/ deletion occurring only between /o/ and /ũ/; neither did it investigate the possibility of this behaviour in the environment of other vowels, although it is suspected that the variation will be present to different degrees in those other environments. Since doing this will require more data beyond the initial clarifying objective of this article, this is left for future investigations.

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APPENDICES

APPENDIX 1: TEST UTTERANCES

SET 1: ***ÒUN*** SENTENCES

1) **Òun** ló ṣe é 'He is the one that did it.'
2) **Òun** ni mo fún 'It was he that I gave.'
3) **Òun** àti aya rẹ́ ńjà 'He and his wife are fighting.'
4) **Òun** ni ọmọ aláìgbọ̀ràn 'He is the stubborn child.'
5) **Òun** tó gbàgbé ọjọ́ ìbí ẹ̀ 'She that forgot her birthday.'

SET 2: ***OHUN*** *SENTENCES*

6) **Ohun** tí mo fé ṣe 'The thing that I want to do.'
7) Fún mi ní **ohun** tí o fé fún mi 'Give me the thing that you want to give me.'
8) **Ohun** tí kò dára kò dára 'What is not good is not good.'
9) **Ohun** àmún ṣagbára 'Reinforcement material.'
10) **Ohun** tí àgbà fi ju ọmọdé lọ 'what distinguishes an adult from a child.'

SET 3: ***OHÙN*** SENTENCES

11) **Ohùn** ta ni mo gbọ nínú ihò yẹn? 'Whose voice did I hear in that hole hear?'
12) **Ohun** tó bá le mú **ohùn** já gaara ni mo fẹ́ 'I want something that can clear the voice.'
13) Bàbá mọ **ohùn** mi 'Father knows my voice.'
14) Ìfihàn ni **ohùn** ọmọ yìí o! 'This child's voice is a revelation!'
15) Mo gbádùn **ìhun** tí ọmọ yií ń **hun ohùn** rẹ́ yí o! 'I enjoy how this child is weaving his voice!'
16) **Ohùn** oníròhìn ti **há** o 'The newscaster's voice has trailed off.'

SET 4: **ÒUN** AND ***OHUN*** MIXED SENTENCES

17) **Òun** kọ́ ni yió koọ́ mi ní **ohun** tí màá ṣe 'He is not the one to teach me what I should do.'
18) **Òun** ló mọ **ohun** tó fẹ́ ṣe 'He is the one that understands what he wants to do.'
19) Ó ní **ohun**kóhun tí **òun** yió fúnmi á dára 'She said whatever she will give me will be good.'
20) **Òun** ni àgbà, **ohun** tó bá sọ ló tọ́ 'he is the eldest, whatever he said is the right thing.'
21) Kábíèsí ní **ohun** tí **òun** kò bá fẹ́ di èèwọ̀ 'the king said whatever he dislikes is forbidden.'

APPENDIX 2: /h/-INITIAL VERBS

1) ***há*** 'stuck/obstructed'
2) ***han*** 'screech'
3) ***ha*** 'scratch'
4) ***hó*** 'boil'
5) ***họ́*** 'tight'
6) ***he*** 'pick'
7) ***hẹ*** 'support'
8) ***hú*** 'uproot'
9) ***hù*** 'germinate'
10) ***hun*** 'weave'

Appendix 3: /h/ realization in *òun, ohun,* and *ohùn*

		MALE																	FEMALE											OVERALL TOTAL		OVERALL AVERAGE (%)
	Speakers →	OT	BA	AY	DA	IF	FA	FO	AD	SA	TOTAL		Average (%)		MO	AJ	AK	AN	AR	TU	TOTAL		Average (%)								
Òun	Realized	12	20	36	26	5	27	14	24	36	**200**				45	6	18	27	11	28	**135**									**335**		
	Total tokens	48	50	50	50	50	50	50	50	50	**448**		**44.6**		50	50	50	50	50	50	**300**		**45**							**748**		**44.8**
ohun	Realized	28	14	45	22	7	22	10	22	29	**199**				38	3	5	5	10	31	**92**									**291**		
	Total tokens	54	55	55	55	55	55	55	55	55	**494**		**40.3**		55	53	55	55	55	55	**328**		**28.1**							**822**		**35.4**
ohùn	Realized	21	26	27	17	29	22	19	25	21	**207**				26	20	15	22	18	24	**125**									**332**		
	Total tokens	28	30	30	30	30	30	30	30	30	**268**		**77.2**		30	30	30	30	30	30	**180**		**69.4**							**448**		**74.1**